GCCS/DII COE System Integration Support

DII COE Segment
System Administrator=s Manual
(for IRCS Version 1.0.0.2/2.8.21)

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Prepared for:

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Defense Information Infrastructure (DII)

Common Operating Environment (COE)

System Administration Manual
Internet Relay Chat Server (IRCS)
Version 1.0.0.2/2.8.21 (HP-UX 9.07/Solaris 2.4)

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Preface

The following conventions are used in this document:

Bold	Used for information that is typed, pressed, or selected in executables and instructions. For example, select **connect to host**.
Italics	Used for file names, directories, scripts, commands, user IDs, document names, and Bibliography references; and any unusual computerese the first time it is used in text.
Underline	Used for emphasis.
Arrows <>	Used to identify keys on the keyboard. For example <Return>.
AQuotation Marks@	Used to identify informal, computer-generated queries and reports, or coined names; and to clarify a term when it appears for the first time. For example **A**Data-Generation Report.@
`Courier Font`	Used to denote anything as it appears on the screen or command lines. For example `tar xvf dev/rmt/3mm`
Capitalization	Used to identify keys, screen icons, screen buttons, field, and menu names.

1. Internet Chat Relay (IRC) Overview

Internet Relay Chat (IRC) is a suite of applications that provides a chatter-style communications capability to multiple users who wish to participate in on-line conferences. The IRCs client/server architecture allows IRC client applications to be connected to a network of IRC servers. Users who invoke an IRC client and connect to an IRC server may communicate with others on the same IRC network by joining a Achannel@ to send and receive messages.

This document describes how general IRC server configuration information can be modified for a given IRC server workstation. However, to obtain a more thorough understanding on how to administer an IRC server or an IRC Server Network, refer to the following, on-line documentation contained within the IRCS segment:

IRCS/man/Admin	(IRC Server System Administration)
IRCS/man/Operators	(IRC Server Network Administration)
IRCS/man/Networking	(IRC Server Network Administration)

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2. IRC Server Configuration

An IRC server (IRCS) has one, primary configuration file, */h/COE/Comp/IRCS/lib/ircd/ircd.conf*. This file is a text file that may be modified manually using a text editor or by using the system administration functions provided by this segment. This section describes the format of the *ircd.conf* file and the system administration functions provided by this segment, which can be used to modify this file.

2.1 The *ircd.conf* File

This section describes the format of the various lines which may be contained in the *ircd.conf* file. The lines are described in the order in which they should appear in the file.

> **NOTE:** Not all lines described are required to be in the file.

When making changes to this file, note the following:

1) All entries must be left-justified and may not contain leading blanks. Any line beginning with a "pound" sign ("#") is a comment line and is not processed by the *ircd* daemon.

2) An asterisk ("*") in a field indicates an unused field for some lines and "wildcards" for others. Asterisks that are not defined as wildcards for a particular field represent unused fields.

3) The following keywords have been used in this document to indicate whether or not a line is mandatory:

   - **MANDATORY:** The line must be included in the file. If these lines in are not in your server=s *ircd.conf* file, the server will not work properly.

   - **NETWORKED:** This line must be included if you are connecting your IRC server to any other server (i.e., your server is not running standalone).

4) The entire configuration file is read (i.e., processed) bottom-up. Therefore, if you have to put something in a specific order (for example, client-connection lines), put them in reverse-order.

5) For demonstration purposes, this document presents all authentication codes in plain text format. However, all authentication codes used in the *ircd.conf* file, with the exception of codes used in C: lines, must be encrypted. Therefore, any authentication code modified in this file must be replaced with an encrypted authentication code. Note that authentication codes used in C: lines must be plain text.

   Encrypted passwords generated during IRCS installation have been generated using the *mkpasswd* program. You may run the */h/COE/Comp/IRCS/lib/ircd/encrypt <text string>* script, which uses *mkpasswd,* from the command line to encrypt any text string. You will need to cut the resulting, encrypted password from your display and paste it into the appropriate field in your *ircd.conf* file (see instructions displayed by this script).

NOTE: If you get an Incorrect Password error at anytime during the operation of your IRC server, make sure that you have used encrypted authentication codes in the appropriate fields within your *ircd.conf* file.

6) You will need to do one of the following for the changes made to the *ircd.conf* file to take affect:

   - Stop and re-start your IRC server (for Y:, M:, and A: line changes).
   - Send a hang-up signal to the *ircd* daemon (for all other changes).

   Since stopping and re-starting your IRC server will guarantee that any change made to the *ircd.conf* file will take affect, it is recommended that you use this method for applying changes to your IRC server (see Section 3.5).

The lines in the *ircd.conf* file are defined in the following subsections.

2.1.1 M: Line - MANDATORY

The M: line sets your server=s name, description, and port number. Fields, in order are:

The A: line lists your administrative information (e.g., Site Name, Point-of-Contact information, etc). Though no specific information is required here, it is recommended that you include (at the minimum) the contact information for the system administrator of your server.

```
A:<Site/Facility Name>:<Functional Description of
Server>:<Point-of-Contact Info of Sys Admin>
```

For example:

```
A:SAIC:Experimental Server:POCname POCe-mail
```

2.1.3 Y: Line - SUGGESTED

The Y: lines define connection classes. Connection classes allow you to fine-tune your client and server connections. It is suggested that clients and servers be placed in separate classes; and, if you have many server connections, each set of servers (defined arbitrarily by you) should have its own class. If you have clients connecting from a number of different sites, you may want to separate them into classes. For instance, you may want to put local users in one class and remote users in another class. Class numbers are not arbitrary. For auto-connecting servers, (i.e., neighboring servers whose C: lines end with a port number [see Subsection 2.1.7]), a higher class number indicates a higher priority in auto-connecting.

The fields in order are: class number, ping frequency (in seconds), connect frequency (in seconds), maximum number of links (used for auto-connecting and limiting the number of clients in that class), and sendq. It is a good idea to set ping frequencies to the same value at both ends of a link. That is, the Y: lines of servers that have been configured to connect to one another (i.e., IRC neighbors) should have the same ping frequency value.

```
Y:<class>:<pingf>:<connf>:<maxlinks>:<sendq>
```

For example:

```
Y:1:90:0:20:100000
```

In this example, the connect-frequency is zero indicating that this is a client class.

```
Y:2:90:300:1:600000  (Y: line of your server)
```

The fields in order are:

`I:`*`IP-address-mask`*`:`*`authentication code`*`:`*`domain-mask`*`::`*`connection class`*

The *authentication code* is optional and may be encrypted. The *connection class* is an optional field.

For example:

```
I::tada:*trident.disa.mil::1
```

In this example, anyone from the *trident.disa.mil* domain may connect providing they know the authentication code tada.

> **NOTE:** Listing this I: line first will cause it to be read last which means that, if clients connecting to this server do not match I: lines below it will have to provide the authentication code *tada* to connect.

```
I:139.121.*::*company.com::1
```

This is a standard I: line that will permit clients connecting from an address beginning with `139.121` or, from domains ending in *company.com* to connect to your server.

> **NOTE:** The *ircd* daemon performs right-most matching which means that, in this case, if a client running on a machine whose hostname is *cronos.company.com* and has an IP address of `139.121.10.3` connects to your server, the client will show up as *<username>@cronos.company.com* since *company.com* is the first match it found, even though the second match, `139.121`, is also valid.

```
I:NOMATCH::*company.com::1
```

ircd.conf file.

The fields in order are:

`O:`*`hostname`*`:`*`authentication code`*`:`*`Nickname`*

The *authentication code* is encrypted.

For example:

```
O:*.company.com:oper123:ircop
```

In this example, operators authenticating themselves with the Nickname of *ircop* and the authentication code of *oper123* from the *company.com* domain may connect to your server.

2.1.6 U: Line - NOT NECESSARY

The U: line defines the default server for the IRC client that ships with the server. Since default servers for clients are defined with the IRCC segment is installed, this line is not necessary.

2.1.7 C: Line and N: Line - NETWORKED

The C: lines define the servers your server will attempt to connect to. The N: lines define the servers that have permission to initiate a connection to your server. C: and N: lines must be used in pairs; one cannot be used without the other.

The C: line fields in order are:

`C:`*`remote server's hostname`*`:`*`authentication code`*`:`*`remote server's name`*`:`*`port`*`:`*`connection class`*

The *authentication code* may be encrypted.

The N: line fields in order are:

`N:` *`remote server's hostname`*`:`*`authentication code`*`:`*`remote server's`*

server name is *irc1.company.com* and you wish to present it to other servers as **.company.com*, the host-mask value for your server would be **A**1.@

For example:

```
C:irc-2.mit.edu:democratic:irc-2.mit.edu::2
N:irc-2.mit.edu:republican:irc-2.mit.edu:1:2
```

The C: and N: lines indicate standard server connection lines, masking to the host **company.com*.

2.1.8 L: Line - OPTIONAL

The L: lines specify neighboring leaf servers. They are only useful if your server is defined as a non-leaf server or hub. There are two ways you can use L: lines. The first way limits one particular site to a particular tree depth (including zero, which means that the server may not connect to any other servers linked behind it since doing so will cause the connection to fail). The second way enables you to permit only select servers that are currently (i.e., at connect time) configured as a leaf to connect to your server.

The L: line fields in:

L:*dis-allow connections to this host-mask*::*server name*:*depth*

The *depth* field is optional.

For example:

```
L:::kaja.gi.alaska.edu
```

This line will force *kaja.gi.alaska.edu* to connect only as a leaf (if it is not a leaf, the link will be dropped).

```
L:::cm5.eng.umd.edu:1
```

This line will force *cm5.eng.umd.edu* to have depth of only one below it, that is, it is allowed to have only leaves connected to it.

Awildcarded@ (e.g., *.*au*), then the wildcarded name should be used in the third field.

The H: line fields are:

`H:`*`servers which are permitted entry`*`::`*`hub server`*

For example:

```
H:*::cs-ftp.bu.edu
```

This line permits the server *cs-ftp.bu.edu* to allow any servers behind it to connect.

```
H:*.mit.edu::irc-2.mit.edu
```

This line permits the server *irc-2.mit.edu* to allow any MIT servers (i.e., servers with names matching **.mit.edu*) behind it to connect.

2.1.10 K: Line - OPTIONAL

The K: lines define user@host patterns to be banned from this particular server (with an optional time field). Note that K: lines are not global. Therefore, if you ban a user from your server, they can still use any other IRC server from which they are not banned.

The K: line fields are:

`K:`*`host-mask`*`:`*`time field`*`:`*`username`*

Wildcards (e.g., A*@) are permitted when defining the host-mask. Time is represented in 24-hour time (i.e., Aa.m.@ or Ap.m.@ is not used).

For example:

```
K:*.alaska.edu::FSSPR
```

This line bans the username FSSPR on any machine from the University of Alaska (i.e., **.alaska.edu*).

```
K:acs*.bu.edu:0800-1200,1300-1700:*
```

The P: line fields are:

```
P:<host-mask>:*:*:<port number>
```

For example:

```
P:*.umd.edu:*:*:6665
```

This line specifies an internet domain socket on port 6665 for University of Maryland users.

3. IRCS Systems Administration Tool - *IRCS_verify*

A systems administration tool has been provided with the IRCS segment to facilitate the making of changes that are most frequently made to the *ircd.conf* file. This tool is called *IRCS_verify* and is located in the following */h/COE/Comp/IRCS/bin* directory.

This tool will allow you to do the following tasks:

- Add clients lines (i.e., I: lines) to the *ircd.conf* file
- Remove clients lines (i.e., I: lines) from the *ircd.conf* file
- Add neighbor lines (i.e., C:, N:, H:, and L: lines) to the *ircd.conf* file
- Remove neighbor lines (i.e., C:, N:, H:, and L: lines) from the *ircd.conf* file
- Stop and start your IRC server

This section describes how to use this tool to accomplish each of these tasks. Please note that if you are running this tool as a non-root user, you will be required to provided the *root* password.

For further information on how to administer your IRC server, refer to the on-line documentation found in the */man* directory of the IRCS segment.

3.1 Adding Client Lines (I: lines)

From the command line, run the `/h/COE/Comp/IRCS/bin/IRCS_verify add_clients` command. If prompted, enter the *root* password. Then take the following steps:

Step 1: *** * * IRC SERVER CLIENT SPECIFICATION * * ***

When the **IRC SERVER CLIENT SPECIFICATION** window is displayed, carefully read all of the instructions provided.

Step 2: *** * * ENTER A RESPONSE * * ***

When prompted to `Enter an I-line for your new client`, type the I: line that corresponds to your new client and press the **OK** button.

Step 4: *** * * INFORMATIONAL MESSAGE * * ***

If the line you selected to add in Step 3 does not begin with an **A**, the message `Incorrect I-line. Please re-enter` is displayed. Press the **OK** button to continue.

Step 5: *** * * RESPOND TO QUESTION * * ***

Following either Steps 3 or 4, the prompt `Add another Client` is displayed. Press the **YES** button to add another client line or press the **NO** button to exit this routine.

3.2 Removing Client Lines (I: lines)

From the command line, run the `/h/COE/Comp/IRCS/bin/IRCS_verify rem_clients` command. If prompted, enter the *root* password. Then take the following steps:

Step 1: *** * * THE FOLLOWING ARE IRC CLIENTS THAT HAVE ACCESS TO YOUR SERVER * * ***

When the **THE FOLLOWING ARE IRC CLIENTS THAT HAVE ACCESS TO YOUR SERVER** window is displayed, carefully note the client lines listed.

Step 2: *** * * RESPOND TO QUESTION * * ***

When prompted to `Remove <`*`first I-line listed`*`> from the config file?` press the **YES** button to remove this line or the **NO** button to leave this line in the configuration file.

Step 3: Repeat Step 2 for each client lines listed in the **THE FOLLOWING ARE IRC CLIENTS THAT HAVE ACCESS TO YOUR SERVER** window. After making a selection for each line displayed, the program automatically terminates and you are returned to the command line.

3.3 Adding Neighbor Lines (C:, N:, H: and L: lines)

NOTE: Neighboring IRC Servers should only be specified after all of the following information has been obtained for each neighboring site.

- Site Name
- Machine name and/or IP Address
- The Authentication Code for the IRC server at this site
- Whether this site=s server is a hub or leaf server on the IRC Network.

Contact the system administrator for each of the neighboring sites to obtain this information.

From the command line, run the `/h/COE/Comp/IRCS/bin/IRCS_verify add_neighbors` command. If prompted, enter the *root* password. Then take the following steps:

*** * * IRC Server Neighbors Specification * * ***

Step 1: When prompted, enter the name of the machine hosting your neighbor=s IRC server.

Step 2: Enter your neighbor=s IRC server name (that is, the IRC server name your neighbor used or will use when installing their IRC server.)

Step 3: Enter a non-null, authentication code (eight chars or less) that your server will use to access your neighbor=s server.

Step 4: Enter a non-null, authentication code (eight chars or less) that your neighbor will use to access your server.

Step 5: When prompted, indicate whether or not this neighboring server is a hub or leaf by responding **A**y@ or **A**n,@ respectively.

Step 6: Repeat Steps 1 through 5 to specify additional neighboring IRC servers. When done, press <**Enter**> when prompted to enter the machine hosting your neighbor=s IRC server (without specifying a server name). The program terminates and you are returned to the command line.

3.4 Removing Neighbor Lines (C:, N:, H: and L: lines)

Step 2: *** * * RESPOND TO QUESTION * * *** @

When prompted to `Remove <first C-line listed> from the config file?` press the **YES** button to remove this line or the **NO** button to leave this line in the configuration file.

Step 3: Repeat Step 2 for the neighboring line (C: lines) listed in the **THE FOLLOWING ARE IRC NEIGHBORS TO YOUR SERVER** window. After making a selection for each line displayed, the program automatically terminates and you are returned to the command line.

NOTE: All corresponding N: and H: or L: lines will be removed for each C: line removed.

3.5 Stopping and Starting the IRC server

For any of the changes made to the *ircd.conf* file to take affect, you must stop and re-start your IRC server.

To stop your IRC server, run the `/h/COE/Comp/IRCS/bin/IRCS_verify stop` command from the command line. If prompted, enter the *root* password.

The message **A**Killing the IRC daemon...@ is briefly displayed.

To re-start your IRC server, run the `/h/COE/Comp/IRCS/bin/IRCS_verify start` command from the command line. If prompted, enter the *root* password.

The message **A**Starting the IRC server...@ is briefly displayed.

NOTE: That you may use these commands to stop and re-start your server when performing other server administration functions.